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Latin American Women's Earnings and Participation in the Labor Force

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and
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Despite worsened economic conditions since the 1970s, women's participation in the labor force has increased significantly since the 1950s — possibly because women have benefited disproportionately from expansion of the public sector. Sound public policy on education, family planning, childcare, and taxes — as well as public efforts to increase women's job opportunities — is most likely to improve women's (and hence children's) welfare.

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This paper — a product of the Human Resources Division, Latin America Technical Department — is a summary of a larger LAC study, with substantial contributions from the Women in Development Division of the Population and Human Resources Department, funded largely by the Norwegian Trust Fund. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Liliana Longo, room I4-187, extension 39244 (38 pages). February 1992.

Using historical census data and the latest household surveys, Psacharopoulos and Tzannatos investigate changes in female employment in Latin America, the factors that determine women's participation in the labor force, and the reasons for the gap between men's and women's earnings.

Psacharopoulos and Tzannatos find, to their surprise, that despite worsened economic conditions since the 1970s, women's participation in the labor force has increased significantly since the 1950s. One explanation may be that women — especially educated urban women, most of whom probably come from the middle and upper classes — benefited disproportionately from expansion of the public sector. The factors that have most affected women's decisions to join the work force have been (after controlling for age) education and family conditions (whether the woman is married, is a head of household, or has children). Creating opportunities for women's education and employment when such factors are absent because of market failures (of which discrimination may be only one cause) will improve efficiency and reduce poverty.

Other policy-based factors that can affect women's participation in the work force include the availability of family planning services and child-care facilities. Women's participation in the labor force can also be affected by improving family law and tax regulations that create hardships for women, especially in the Caribbean, where internal and overseas migration are common (women as urban domestic servants and men as industrial workers abroad), where visiting partnerships are common, and where women are often thrown into a vicious cycle of poverty and an inability to work.

Psacharopoulos and Tzannatos found that the same marginal investment (one additional year of education) yields higher returns for women than for men; and that the most cost-effective approach is to emphasize increased primary education for poorly educated women rather than more public tertiary education for more advantaged women.

In all of the countries studied, women are rewarded less than men and gender differences in human capital endowments account for an average of about a third of the observed difference in earnings — prima facie evidence of discrimination. On the other hand, women appear to be rewarded more proportionate to their human capital endowments than men are. This may be because they benefit disproportionately from expansion of the public sector.

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1. Introduction

The reasons for women's inferior employment and earnings position in the labor markets of developing countries have become a much debated topic in Labor and Development Economics. In this spirit, we first examine broad trends in female participation in 15 Latin America countries using population census data for the post-war period.[1] We subsequently present the results of female participation functions that show which characteristics influence a woman in her decision to join or not join the labor market. In addition, we utilize the latest national household surveys to assess the earnings differentials between women and men. We subsequently examine whether workers are rewarded only according to their economic characteristics, or whether their sex plays a role. If the latter, then one can legitimately talk about sex discrimination in the labor market and start thinking of ways to remove this social inequity and inefficiency. The distributional effects of such policies will be in the right direction as recent developmental work has demonstrated the "feminization" of poverty.[2] This is, perhaps, one of the rare examples in social policy where intervention can simultaneously achieve beneficial efficiency and equity effects provided, of course, that the diagnosis is correct.

2. Female Labor Force Participation Trends

Latin America and the Caribbean have twice the number of countries examined in this paper. However, our countries account for more than 90 percent of the 120 million total (female and male) labor force in the region.[3] In this respect, any conclusion drawn from our sample should be fairly representative of the whole region. Table 1 shows the female participation rate in the countries under consideration for two time periods (sometime in the 1950s and the 1980s depending on the country). The aggregate (all-ages) labor force participation rate is potentially misleading, especially in cross-country comparisons, as it is affected by differences in the age-pyramid of the population. We have, therefore, broken down the information into three crucial age groups: the young (those below the age of 20 years), the prime-age (20 to 59) and older (60+) women.

Bearing in mind that there is some variation in the way national statistics draw the distinction between work and non-work,[4] the table clearly suggests that women's labor force

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[1] The countries studied are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Honduras, Jamaica, Mexico, Panama, Peru, Uruguay and Venezuela (for more information on the data sources see Psacharopoulos and Tzannatos, 1991).

[2] Tokman (1989).

[3] ILO (1990) provides information for 35 Latin America and Caribbean countries but many of the countries not included in the present analysis are too small to alter the general picture. The most populous country excluded from the present analysis is Cuba (with about 3.5 million workers) which does not have, however, a market oriented economy.

[4] See Bowers (1975), Standing (1981), Psacharopoulos and Tzannatos (1989).

participation rate in Latin America[5] was initially low: even at prime-age, fewer than one-in-four women were found in the labor force in the 1950s. The only region with lower female labor force participation rates was (and still is) the Middle East, where cultural factors are not conducive to women's employment in the open labor market.[6] However, female participation in Latin America has been on the rise. Concentrating at the moment on the participation rate of prime-age women, of the 13 countries for which statistical information exists for both periods, only one country experienced a decline, namely Jamaica. Thus the (unweighted) average of female labor force participation rate in the countries under examination increased from about one-in-four prime-age women (24.1 percent) to almost one-in-three prime-age women (31.2 percent) in a time-span of no longer than one generation. In this respect, Latin America is now more aligned with the rest of the world. The number of working women for every five working men has risen to almost two in the region compared to a world ratio of three women to five men.[7] As a final observation one can add that the standard deviation in the participation rates of the countries under consideration declined from 9.5 to 8.6 percentage points, despite the increase in the average participation rate in the region by almost 9 percentage points. A comparison of these measures of central tendency and dispersion is illuminating: the coefficient of variation (the ratio of the latter to the former: last row in Table 1) declined from almost 40 percent to 26 percent (a reduction of one-third). This finding suggests that there are common factors operating in the labor markets during economic development.

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[5] For reasons of brevity, from now on we will use the term "Latin America" to refer to the whole region south of the United States, that is, to include Latin America and the Caribbean.

[6] Boserup (1970); Kozel and Alderman (1988).

[7] Sivard (1985).

Table 1
Female Labor Force Participation Rate by Age Group

Country	End-Year		Female Participation Rate by Age Group					
	Early	Late	<20		20-59		60+	
			Early	Late	Early	Late	Early	Late
Argentina	1960	1980	8.2	6.4	24.4	33.1	6.6	5.1
Boliviana	1976	na	6.9	na	23.1	na	14.1	
Brazil	1960	1980	6.3	9.4	18.2	33.0	10.0	7.4
Chile	1952	1982	28.4	14.0	28.6	28.9	15.6	6.2
Colombia	1951	1985	9.0	12.5	19.0	39.4	12.3	15.5
CostaRica	1963	1984	13.5	9.5	18.6	26.4	5.8	4.3
Ecuador	1962	1982	4.9	4.0	17.7	22.6	13.2	10.4
Guatemala	1964	1981	9.4	8.1	13.1	14.7	8.7	7.3
Honduras	na	1974	na	14.2	na	17.8	na	7.7
Jamaica	1962	1982	10.5	6.1	52.7	48.2	13.8	9.8
Mexico	1960	1980	9.7	15.5	19.1	32.7	30.0	20.3
Panama	1950	1980	23.4	16.8	24.9	35.7	10.1	7.2
Peru	1961	1985	15.9	10.5	22.7	29.0	14.2	15.5
Uruguay	1963	1985	29.4	15.2	32.0	46.0	5.2	6.3
Venezuela	1961	1981	9.7	9.4	22.1	35.0	8.9	7.2
Average*			13.7	10.6	24.1	32.7	11.9	9.4
Standard deviation*			7.9	3.8	9.5	8.6	6.1	4.6
Coefficient of variation			57.4	36.2	39.6	26.4	51.6	48.9

Notes: 1) The "below 20" is "0-19" in Bolivia, Brazil, Ecuador and Jamaica; "10-19" in Argentina, Guatemala, Mexico, Peru and Venezuela; "10-24" in Colombia; "15-19" in Chile, Honduras and Panama; and "12-19" in Costa Rica. In Uruguay it refers to those aged 15-19 in the early period and those aged 12-19 in the late period.

2) The "20-60" refers to "20-64" in Bolivia and Jamaica with corresponding changes to the "60+" age-group.

Source: Based on ILO (1990), Table 1.

* Excluding Bolivia and Honduras in both periods.

It is worth dwelling a little longer on the case of Jamaica, the only country in our sample where the rate of female participation in the labor force was lower in the latest period. Jamaica had a (statistically) abnormally high rate of female participation in the early period. The

Jamaican female participation rate was more than double the regional average and about 3 standards deviations greater than the regional mean. In this respect, one might have expected that, if there were to be a change, the change would have most probably be a downward one. In fact, the rate of male labor force participation in Jamaica also fell from 96 percent in 1962 to 76 percent in 1982.[8] The changes in both the female and the male participation rates suggest that still women in Jamaica experienced a lesser decline in participation than men. Perhaps, a common factor behind the decline in the participation rates of both women and men in Jamaica has been the significant negative economic growth that the country experienced during the last two-and-a-half decades: per capita GDP fell by as much as 1.3 percent per annum between 1965 and 1989.[9]

In contrast to the increase in the participation rate of prime-age women in the region, the participation rates of younger and older women have consistently declined since the 1950s. With respect to younger age-groups, the only countries where participation increased were Brazil and Colombia. This was not unexpected: both countries experienced the highest rate of growth in the participation rate of prime-age women (from almost 19 percent for both countries in the 1950s to 33 and 39 percent respectively for Brazil and Colombia in the 1980s). Hence, there must have been some factors in these two countries that were more conducive to an expansion of the overall female labor supply than in other countries in the region. Colombia also shows a rise in the participation rate of older women along with (mild increases) in Peru and Uruguay. However, these mild exceptions do not change the overall picture and, in summary terms, the average participation of young women fell from 13.7 percent to 10.6 percent and that for older women decreased from 11.9 percent to 9.4 percent. The previous remark on the cross-country variance of participation rates in the region that was made for the case of prime-age women holds also in the case of the two other age-groups: the coefficient of variation for both younger and older women was reduced significantly. It was reduced by almost half for young women and by one-quarter for older women. This finding reinforces the view that the countries in the region tend to become more homogeneous with respect to the use of female labor during economic development.

The increase in female participation in the region was somewhat unexpected given the experience of industrialized countries. The latter saw a rise in women's female participation during periods of consistent economic growth and tight labor market conditions.[10] In contrast, the sizeable increase in female participation in Latin America occurred in a period of adverse economic conditions. For example, in five of the countries in the region (Argentina, El Salvador, Jamaica, Peru and Venezuela) per capita GDP showed a negative average growth rate

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[8] ILO (1990), Table 1.

[9] World Bank (1991, Table 1, p. 204).

[10] See for example Mincer (1962), Cain (1966), Oppenheimer (1974) for the American case; Nakamura, Nakamura and Cullen (1979a) for Canada; Joshi, Layard and Owen (1985) for Britain. For a survey of the experience of the industrialized countries see Killingsworth (1986).

between 1965 and 1989.[11] Per capita GDP was also lower in 1985 than it was in 1981 in another 15 countries out of the additional 27 countries in the region for which information exists.[12] An explanation for the apparently diverse experience between Latin America and the group of industrialized countries may be the expanding opportunities for employment in the public sector -- a traditional employer of female labor. It is therefore possible that the expansion of the public sector has in turn retarded the growth in the region.[13] Unfortunately the paucity of historical data with respect to the important distinction between private versus private employment does not allow us to pursue further this reasoning.

Could women's higher participation rates in the more recent period be the result of the "added worker" effect? This effect suggests that more women (or, more appropriately, more secondary workers) enter the labor market during periods of economic recession in an attempt to preserve family income and the level of household consumption. In contrast, the "discouraged worker" effect suggests that women drop out of the labor force during periods of recession because expected returns to search are low: wages are depressed and the probability of finding employment is small. We do not think that either effect has much to do with the observed rise in female participation in the region, even more so for the dominance of the added worker effect over the discouraged worker effect. There are three reasons for this belief. First, both the added and discouraged worker effects are operating at the margin and relate to cyclical, not long-term, variation. Our observation period is long enough for the task in hand so that any cyclical effect should not be sufficiently strong to distort the overall picture. Second, empirical studies have consistently found that in the case of women, the discouraged worker effect is the dominant one. One of the reasons for this is that during an economic recession women leave employment and become economically inactive in contrast to men who move from employment to unemployment. Or they may switch more to home-based work which may be outside the formal sector. Another reason is simple arithmetic: the added and discouraged worker effects operate basically on the percentage of the labor force who are unemployed and who usually constitute a small percentage of the total labor force. Hence, the broad trends in participation rates are primarily determined by the, say, 80 or even 90 percent of the labor force who are in employment. Third, and finally, the drop in the participation rates of younger women is not compatible with a dominant added worker effect.[14] We, therefore, conclude that the rise in female participation that our data suggest for the post-war period is due to an underlying trend and cannot be attributed to the recession that hit the region in the eighties.

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[11] World Bank (1991, Table 1, pp. 4-5).

[12] World Bank (1990, Table 1, pp. 4-5).

[13] This assertion is made by Schultz (1990).

[14] For example, Joshi (1981) found no evidence that women have a different degree of cyclical change in employment than men through specific groups of women and men (such as the younger and pensioners) have markedly different trends of cyclical instability.

In conclusion, the evidence suggests that women's participation rate has risen significantly since the 1950s. The rise was due to greater participation rates of prime-age women. In addition, the labor force in the countries examined in this paper has become more homogenous with respect to women's participation. This observation applies to all three age-groups (young, prime-age and older women). Something that cannot be ruled out whether the increase was the result of market forces or an expanding public sector.

3. The Determinants of Female Participation

An obvious precondition for any policy targeted at female participation is to understand the factors that affect a woman's decision to join or not to join the labor market, especially a comparison of her marginal product at home and the wage labor force. In order to cast more light in this area, we fitted a series of Logit regressions on "a woman's decision to participate" in the labor force. The dependent variable took the value of zero, if the woman was not working, and unity, if the woman was observed to be in the labor force. The independent variables included a number of what can be labelled as exogenous factors such as age, years of schooling, husband's earnings and other income, location (rural/urban or regional dummies), family size and so on. The exact specification was dictated by the availability of information in the respective country household surveys at our disposition.[15] Table 2 summarizes the effects of some key variables on women's decision to participate in the labor market in selected countries.

Education has a significant effect on participation. For example, in Argentina a woman with less than primary education has a ceteris paribus probability of participation of only 28 percent compared with a probability of 58 percent of a woman who is a university graduate. In Venezuela the probability of participation for the corresponding education groups rises from about 30 percent to more than 85 percent.

Women's family characteristics exercise a strong effect on participation, too. Married women's probability of participating in the labor force is about half the probability for single women. For example, the probability for married women in Chile drops to 14 percent compared to 41 percent for single women. In Costa Rica the corresponding decrease is from 40 percent to 18 percent, in Venezuela from 56 percent to 33 percent and in Guatemala from 33 percent to 14 percent.

Not surpisingly, being head of household increases the probability of participation in all countries under consideration. In fact, this demographic aspect seems to be one of the strongest determinants of female labor force participation. For example, in Colombia the probability for a woman who is head of household jumps to 47 percent (from 21 percent for non-heads of

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[15] The full results are reported in the country studies contained in Psacharopoulos and Tzannatos (1991).

household), in Panama to 57 percent (from 20 percent), in Uruguay to 66 percent (from 34 percent), in Venezuela to 65 percent (from 42 percent) and in Guatemala to 30 percent (from 20 percent).

The effect of children is mixed depending on their age. As a general rule, results from countries which could not take into account the age of children suggest that the probability of participation drops by about 3 to 5 percentage points for each child. When the age of children could be taken into account, the results for young children (aged less than 6 years) suggest that the effect is even stronger. However, the presence of older children increases the probability of female participation in some countries. This can be explained by the fact that older children may be substitutes for women's services at home, as older children can both supervise their younger siblings and also contribute toward other areas of family production.[16] I must also be stressed, that fertility and labor force participation could be a joint decision, raising important endogeneity/estimation issues.

Individual country studies also report effects of variables which are country specific. For example, in Bolivia the probability of a Spanish speaking woman to be in the labor market is 42 percent while the corresponding probability for an indigenous woman is only 22 percent.[17] Also, variables relating to the physical health of a woman have the predicted effect of women, that is, ill-health affects adversely the probability of participation. In addition, the presence of adult non-workers in the household decreases the probability of female participation. This may suggest that there is higher demand for domestic services when household size increases and this translates into an increase in women's shadow wage at home.[18] Finally geographical location is another significant factor for women's decision to participate. As a general rule women in urban areas have a much higher probability of participation than their counterparts in rural areas.

Another consistent result in the participation functions is that, after controlling for other factors, women's propensity to work for pay is high even during the childbearing age (the coefficient on age increases up about the age of 40 to 45 years in all country studies, and it is both sizeable and statistically significant). In this respect, women's behavior appears to be ex ante similar to that of men. However, the actual age profile of female participation dips during

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[16] Boserup (1970) and Standing (1981).

[17] For example, indigenous women have a lower probability of being in the labor force compared with women of other origin. Also in Brazil there are substantial differences in the participation probabilities of women belonging to different racial groups (white, black, Asian and Mulatto).

[18] These estimates may understate the effect of the presence of non-working adults in the household upon the probability of female participation as such adults may also assist in some household tasks performed by women.

the reproductive age.[19] The conflict between productive and reproductive decisions is obvious. In fact, it is this asymmetry, in part biological and in part stemming from societal norms, which largely destines women to the observed employment and pay characteristics in the labor market.

In conclusion, the country studies confirm that women's decision to participate in the labor market depends, on the one hand, on education and, on the other hand, on their demographic characteristics. Of course, these results are partly based on the assumption that these characteristics are exogenous to the participation functions, and this assumption is not necessarily appropriate. However, the magnitude and consistency of results are sufficiently clear for the limited generalizations attempted later in this paper.

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[19] See chapter on "Female Labor Force Participation in Latin America: Patterns and Trends, 1950-1985" in Psacharopoulos and Tzannatos (1991).

Table 2
Female Participation by Selected Sample Characteristics
(percent)

Characteristic	Argentina 1985	Chil 1987	Colombia 1988	Costa Rica 1989	Ecuador 1987	Guatemala 1989	Panama 1989	Peru 1990	Uruguay 1989	Venezuela 1987
Education										
Less than Primary	21.7	na	11.0	16.9	44.0	21.4	10.0	38.6	28.9	31.8
Primary	31.4	23.7	20.0	21.6	46.0	22.4	14.1	38.7	34.7	34.4
Secondary	32.6	32.5	34.0	30.9	47.0	40.7	33.6	40.0	46.9	62.8
University	57.6	60.7	53.0	38.1	49.0	47.2	47.7	63.2	54.1	87.4
Marital Status										
Single	55.9	40.8		40.4		33.0		47.3		56.2
Married	24.5	13.9		17.7		14.1		33.1		34.3
Number of Children										
None	37.2	28.6	25.0	25.2	49.0	22.3	26.7	42.6	39.8	
One	33.6	23.0	20.0	24.4	45.0	21.3	23.7	38.2	32.5	
Two	30.2	18.0		23.5	42.0	20.3	20.1	34.0	25.9	
Household										
Head		37.8	47.0	34.1	65.0	30.3	57.2	57.9	65.8	64.7
Not Head		na	21.0	22.7	43.0	19.6	20.4	na	34.2	41.7
Residence										
Rural		17.9		19.9		15.6	17.8			32.7
Urban		na		28.9		29.7	29.6			45.6

(See Psacharopoulos and Tzannatos (1991), Table 5.)

Note: Numbers are marginal effects or predicted probabilities of participation, controlling for other variables present in the Logit function.

4. Female-Male Pay Differentials

Table 3 shows the average earnings of women and men in the 15 countries for which we have household-level surveys.[20] In all countries female workers are paid less than male workers and in some countries (such as Argentina, Bolivia, Chile, Ecuador and Jamaica) women are paid substantially less than men (female pay less than 30 percent of female pay). Though some variation is due to the fact that the time period to which earnings refer is different across countries, this variation is not great: the standard deviation of the ratio of female-to-male pay is 11 percentage points compared with a regional mean of 73 percent. This may be taken as evidence that women, as a factor of production, are again treated in a rather uniform way across the region with respect to pay as was, indeed, the case of participation.

Table 3
Mean Earnings by Sex

Country	Year	Currency	Earnings		Female/Male Earnings Ratio (percent)
			Female	Male	
Argentina	1985	Australes/month	63559.0	98483.5	64.5
Bolivia	1989	Bolivianos/week	68.9	110.5	62.3
Brazil	1989	Cruzados/hour	7.7	10.9	70.3
Chile	1987	Pesos/month	10912.0	23166.0	47.1
Colombia	1989	Pesos/week	9078.0	10727.0	84.6
CostaRica	1989	Colones/month	14910.0	18459.0	80.8
Ecuador	1987	Sucres/month	22327.0	35077.0	63.7
Guatemala	1989	Quetzals/month	183.5	238.8	76.8
Honduras	1989	Lempiras/week	73.5	90.4	81.3
Jamaica	1989	Jam$/week	33.1	57.4	57.7
Mexico	1984	Pesos/week	5643.7	6590.9	85.6
Panama	1989	Balboas/hour	1.7	2.0	84.8
Peru	1990	Intis/hour	46.1	56.0	82.3
Uruguay	1987	Pesos/hour	730.0	980.0	74.5
Venezuela	1989	Bolivares/week	1179.9	1518.2	77.7

Source: Psacharopoulos and Tzannatos (1991) and references therein.

[20] For reasons of comparison, in Table 3 earnings are presented in the same "form" (that is, per hour, week or month) as they were used in the earnings functions that follow.

The overall gender-differential in pay is not particularly low in Latin America and female relative (to male) wages in the region compare favorably with female relative wages in industrialized countries -- the latter being typically between 65 and 75 percent.[21] In fact, given that the present comparison refers in some cases to weekly, even monthly, earnings the pay differential in Latin America may be lower than that in advanced economies. However, unless evidence to the contrary is presented, we do not believe that this finding suggests that women are less "under-paid" (relative to men) in Latin America than women in industrialized countries. There are two reasons for this belief. First, it is likely that women's earnings in the formal sector are more represented in our data sets than earnings of women engaged in activities in the informal sector. For example, in some countries the number of women reporting positive hours of work but no earnings was more than one-third than the number of women reporting work and positive earnings. Second, and related to the former point, many women employed in the formal sector work in the public sector. As already noted, the public sector is not a discriminating employer. The following table 4 reinforces this point.

Table 4
Female Wages (in local currency) and Female Relative to Male Pay (percent)
in the Private and Public Sectors
(selected countries)

Country (pay reference)	Educational Level	Female wages		F/M pay ratio	
		Private	Public	Private	Public
Guatemala (quetzals/hour)	Primary	1.03	2.11	69	128
	Secondary	2.03	4.07	79	127
	Tertiary	3.90	4.26	72	96
Panama (balboas/hour)	Primary	0.62	1.28	56	77
	Secondary	1.52	2.13	85	77
	Tertiary	1.03	1.83	58	71
Uruguay (pesos/hour)	Primary	551	695	79	91
	Secondary	646	853	71	94
	Tertiary	1211	1268	56	89
Costa Rica (colon/month)	All levels	10928	24954	66	91

Source: Respective country studies in Psacharopoulos and Tzannatos (1991).

[21] See Gunderson (1989).

It is obvious from the above table that women workers in the public sector are paid more than their counterparts in the private sector. In addition women in the public sector have greater pay equality compared to men than their counterparts in the private sector. To some extent these differences reflect the fact that women in the public sector tend to be more educated than women in the private sector, and also relative to men in the public sector. However, another way to establish that women workers in the public sector enjoy a pay premium is the following. In some earnings functions we included a variable indicating the sector (public/private) in which the worker was employed.[22] In this way we controlled for other characteristics and the coefficient on this variable indicates the per se effect on pay from holding a job with the public sector. In the case of Ecuador, women workers in the public sector have a ceteris paribus wage premium of 25 percent compared with female workers in the private sector. However, male workers in Ecuador do not seem to enjoy any pay advantage from employment in the public sector. Also, the female pay premium in public sector employment in Guatemala is 15 percent after controlling for other characteristics. In contrast, male public sector employees in Guatemala have a pay disadvantage of nearly 8 percent.[23]

Consequently, the role of the public sector in the region may distort the overall estimates of female relative pay in a way similar to the observed rise of female participation in the region. The difference between public and private sector pay is not as important in advanced countries. On the contrary, the public sector in the latter group of countries is generally considered to be a low-pay employer because of the other non-pecuniary advantages that it usually offers (tenure, social benefits, pension and so on). These remarks explain why somewhat unexpectedly female relative pay in Latin America appears to be on the high side compared with women's pay in advanced countries.

5. Decomposing the Pay Differential

Two different approaches are typically used to account for the factors determining the observed pay differential between women and men. First, one can examine whether there is a fixed premium/disadvantage associated with the sex of the worker. Second, one can investigate whether individual characteristics of female workers are rewarded differently in the labor market than the corresponding characteristics of men. The former approach relates to a "shift" in the earnings function and the latter to a "difference in the slope coefficients" of the earnings function.

The first approach consists of running a regression of earnings upon the characteristics of all (male and female) workers including a separate variable which indicates the sex of the

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[22] The inclusion of the public/private sector variable was dependent on the available information.

[23] See chapters 16 and 24 respectively for Ecuador and Guatemala in Psacharopoulos and Tzannatos (1991).

worker.[24] This can be shown as follows

$$\ln(W_i) = C + (X_i)a + b(F_i) + e_i \quad (1)$$

where $\ln(W_i)$ is the logarithm of the ith worker's pay,[25] C is a constant term, X is a vector denoting whatever measurable personal characteristics of relevance are utilized by the researcher, a is the vector of the estimated coefficients/effects of these characteristics upon pay, F is a (dummy) variable taking the value of 1 if the worker is female and 0 if the worker is male, and e refers to unobserved or unmeasurable characteristics.[26] The interpretation of equation 1 is that individual earnings depend on the workers's observed characteristics (X's), the worker's sex (F), and unobserved characteristics (the error term) assuming that e is not correlated to F at given X.[27]

The coefficient of interest is that on the variable representing the sex of the worker, which shows whether women receive on average lower pay than men ($b < 0$) other things being equal (after adjusting for whatever the X's account for). This approach constrains, however, the values of the coefficients on the other explanatory variables, such as education and experience, to be the same for women and men. Given that sex-specific earnings functions have produced coefficients on female characteristics that are significantly different than those for men,[28] a finding confirmed also by the present studies, this approach is bound to yield, in general, biased results.

The second approach consists of running two regressions separately on women's earnings and men's earnings and comparing the outcome. This method requires the two regressions to have a strictly comparable specification, that is, the number and type of variables should be the same in both the female and male earnings functions. Thus the estimation can start with the following two regressions (omitting subscripts for notational simplicity)

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[24] See Beller (1984), Fallon and Verry (1988, Chapter 5) or Killingsworth (1990, Chapter 3). For applications and extensions of this approach to measuring wage differentials in other areas of research see Smith (1977), Oswald (1985) and Ehrenberg and Schwarz (1986).

[25]The logarithm of earnings, rather than the level of earnings as such, is considered to be the appropriate regressand both on theoretical grounds (Mincer, 1974) and also on empirical grounds (Dougherty and Jimenez, 1991).

[26]The error term is assumed to be normally distributed with zero mean.

[27]If the error term is negatively correlated to F, then the coefficient on discrimination will be biased upwards as women will possess fewer unobservables than men with the same X's. This bias arises because the characteristics which are unobserved and affect women negatively will register an effect via the coefficient on the dummy variable measuring sex in addition to the pure effect of sex upon pay.

[28]Psacharopoulos (1985); Tilak (1987); Sahn and Alderman (1988); Schultz (1989b); Bustillo (1989).

$$\ln(W_m) = C_m + (X_m)m + e_m \quad (2)$$
$$\ln(W_f) = C_f + (X_f)f + e_f \quad (3)$$

where C_s (s=male or female) is the constant term, X_s is the vector of male or female characteristics, m and f are the respective coefficients on these characteristics, and e_s is the error term with the usual properties. Then, the "adjusted" pay gap can be estimated in the following way: the difference in the average logarithms of male and female pay [$\ln(W_m)$-$\ln(W_f)$ - no subscripts] can be shown to be equal to the percentage difference of male to female average pay (W_m and W_f)[29]

$$\ln(W_m) - \ln(W_f) = \ln[(1+(W_m-W_f)/W_f] \quad (4)$$
$$= (W_m-W_f)/W_f$$

Given the previous two equations and utilizing the regression property that the error term has a mean value of zero, one can rewrite the right hand side of equation (4) as

$$\ln(W_m) - \ln(W_f) = (C_m - C_f) + [(X_m)m - (X_f)f] \quad (5)$$

where first bracket refers to the respective constant terms in the male and female earnings functions, and X_m and X_f are the average values of the male and female characteristics in the sample. Adding to and subtracting from equation (5) the term $(X_f)m$ or $(X_m)f$ and rearranging produces the following two "decompositions" of the gross differential in average pay

$$\ln(W_m) - \ln(W_f) = [(C_m-C_f)+(X_f)(m-f)] + [(X_m-X_f)m] \quad \text{or} \quad (6)$$
$$= [(C_m-C_f)+(X_m)(m-f)] + [(X_m-X_f)f] \quad (7)$$

Thus, the percentage difference in pay can be seen to come from two different sources. First, the differential rewards to male and female characteristics (m-f) in the labor market including the difference between the constant terms and, second, the differences in the quantities of these characteristics held by men and women (X_m-X_f). In this approach, the portion of the wage gap due to differences between the endowments of productive characteristics held by women and men can be considered to be nondiscriminatory (or "justified" discrimination).[30] On the other hand, the portion of the wage gap which is due to differences in the values of the coefficients, including the constant term, can be thought of as the upper bound of ("unjustified") discrimination. Obviously, this approach (equations 6 and 7), which utilizes two separate earnings functions, encompasses the previous one (equation 1) which is based on a single regression and examines, in effect, only the difference in the constant terms. This explains the popularity of the decomposition based on separate earnings functions for women and men in

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[29]Oaxaca (1973).

[30]Blinder (1974).

applied research.[31] This is the approach followed here.

One should note that equations (6) and (7) do not produce the same results. The former decomposition evaluates the justified and potentially discriminatory components of the pay gap, if women were paid as men. The latter decomposition assumes that men are paid like women. This is a common problem with index numbers.[32] In practice, it is not certain whether a decomposition based on female means will produce a higher or lower estimate for justified or unjustified discrimination than a decomposition based on male means. It all depends on the relative "flatness" of the two earnings functions (that is, the curvature of the lines around the region of the average female and male characteristics). However, both decompositions have produced similar results in applied research -- including the present country studies.

The role of the constant term needs further clarification as its value changes depending on how qualitative (dummy) variables are specified. Assume that a variable suggesting "residence" (urban/rural) is included in the earnings functions to capture the fact that pay in urban areas is typically higher than pay in rural areas. If this variable takes the value of zero for rural residence and unity for urban residence, then the regression will produce a positive coefficient on residence. In this specification the constant term will have a relatively low value as it refers to the pay of rural residents. Conversely, if the variable proxying residence takes the value of unity for rural areas and zero for urban areas, it will produce a negative coefficient while the constant term will be higher as it refers to the pay of urban residents. Nothing else will change in this regression and the two specifications are formally equivalent. However, this innocuous change may have an effect on the results of the decomposition to the extent that rural/urban residence affects women's pay and men's pay in different ways. With reference to equation 6 or equation 7, the second term (difference in endowments) will remain unchanged and the percentage of the pay gap attributed to endowments will be as much as before. The first term (difference in rewards) will again be the same if considered together but the relative importance of differences in the constant terms will be different compared with differences in rewards. As a result, attempts to separate the effect of the constant term from the total effect of rewards may result in arbitrary conclusions.[33] Despite this difficulty, most modern studies on discrimination have conventionally examined the effect of the constant term separately within

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[31]It should be noted that, in practice, the two approaches (equation 5.1 and equations 5.6 or 5.7) may yield similar results as the constrained single equation estimation is, in effect, a matrix-weighted average of the results produced by the two-equation method (see also Killingsworth, 1990, p. 96)

[32]Some authors have taken the average of the estimates of the two approaches (Greenhalgh, 1980) but this makes practically no difference to the results as the "slope" effect typically dominates the "endowment" effect.

[33]This point was raised by Jones (1983) who notices that up to 20 percent of the gender wage gap may shift from the constant term component to the other rewards component when qualitative variables are specified in different forms.

the "rewards part" of the gender wage gap.[34] In what follows, the nature of our results necessitates the separation of the effects from the difference in the constant terms and the differences between rewards but the previous qualifications should be borne in mind.

Bearing these remarks in mind we ran separate earnings function for women and men. In addition, we corrected for selectivity, when appropriate the earnings functions of women. This is a well established procedure in order to take into account the possibility that women workers may not be representative of all women in the economy.[35] Table 5 presents the percentage of the pay gap which can be attributed, on the one hand, to differences in the labor market endowments held by women and men and, on the other hand, to differences in the labor market rewards associated with these characteristics.[36]

Table 5
Decomposition of the Male Pay Advantage in the Region
(percent)

Selectivity Correction	Pay advantage due to	Evaluated at Female means	Evaluated at Male means
No	Endowments	3.2	2.9
	Rewards	96.8	97.1
Yes	Endowments	20.4	17.4
	Rewards	79.6	82.6
	Total[1]	100.0	100.0

[1] The overall male pay advantage is 30 log-percentage points.

A number of clarifications need be made in order to correctly interpret the summary decomposition results. First, the pay gap is shown as log-percentage points of the male pay

[34]See among others, Shapiro and Stelcner (1986); Behrman and Wolfe (1986); Birdsall and Fox (1985); Knight and Sabot (1982) and the collection of papers in Birdsall and Sabot (forthcoming).

[35]See Heckman (1979) and the extensive discussion of the subject in Psacharopoulos and Tzannatos (1991, Chapter 5).

[36]The information presented in the Table 5 is derived from Appendix Table A1. There we report results which are standardized on female means (women paid as men: columns 2-3 and 6-7) and also on male means (men paid as women: columns 4-5 and 8-9). We also report separately the results obtained from coefficients which were uncorrected (columns 2 to 5) or had been corrected for selectivity bias (columns 6 to 9).

advantage.[37] This corresponds closely to the ratio of average male earnings to average female earnings in the sample.[38] Second, differences in endowments refer to the difference in the average values of a particular characteristic in the sample between men and women.[39] Third, differences in rewards refer to the difference in the corresponding coefficients as reported in the earnings functions. Again this difference is calculated between men and women.

According to the data, the male pay advantage in the present data set varies between about 15-20 percent (in Colombia, Mexico and Peru) and 40-50 percent (in Argentina, Bolivia, Ecuador and Jamaica). This gives an unweighted average of male pay advantage in the region of about 30 log-percentage points (or female/male pay of about 75 percent). The two most obvious conclusions that can be drawn from Table 5 are the following.

First, the selectivity corrected estimates for the part of the pay gap attributable to differences in rewards (upper bound of discrimination) are lower than the results derived from the uncorrected estimates. Correcting for selectivity reduces the upper bound of discrimination from 97 percent to 80 percent. The reason that selectivity correction (lambda) reduces the unexplained part of the wage gap in the region is because in most country studies the coefficient on lambda was negative.[40] This implies that the difference in the wage offers of women and men is smaller than the difference in actual wages. Though it is not strictly appropriate to calculate averages from percentages, especially when these percentages refer to countries which differ in population size (and characteristics) as much as Jamaica differs from Brazil, the magnitude of the corrected and uncorrected results may be taken to suggest that only a small part of the difference in the actual wages between women and men reflects self-selection of women in the labor force. Our figures imply that, if the average female worker had the characteristics

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[37]The reason for expressing the pay gap in terms of male advantage is because the decomposition is formulated in this way. Recall that our decomposition refers to the difference in the average logarithms of earnings between men and women, that is, $\log(W_m)-\log(W_f)$: see equation 6.

[38]For example, in Argentina the pay gap is indicated as 43.2 percent and this should be taken to mean that men earn on average 43.2 percent more than women. In other words the pay differential is not expressed in one of the more conventional ways -- such as in terms of the relative female/male wage (which is 69.8 percent) or the underpayment of women (which is 30.2 percent).

[39]Again with reference to Argentina working women have on average 9.4 years of schooling compared to 8.8 years of schooling for men (see Appendix Table A3). In this case the relevant difference is -0.6 years of schooling and the negative sign suggests that, had women and men been equally endowed in terms of schooling, the male pay advantage would have been even greater.

[40]The coefficient on lambda was positive and significant only in the case of Uruguay. Insignificant positive coefficients are reported for Ecuador, Peru (1986) and Bolivia. Insignificant negative results are reported for Argentina, Colombia (1979), Costa Rica, Peru (1990) and Venezuela (1989) (see Appendix Table A6).

of the average woman in the population, then the observed pay gap would decrease by approximately 15 percent (or about 5 percentage points).[41]

A second conclusion is that, irrespective of whether the results are based on corrected or uncorrected coefficients, only a small part of the pay gap is attributable to differences in endowments. Even in the case of selectivity- corrected results almost four-fifths of the pay gap is due to differences in rewards. This finding warrants further inspection in order to see which are the variables in the earnings functions that give rise to such result.

6. Contribution of specific variables to the decomposition

The decomposition was estimated from separate earnings functions for women and men. In particular, the typical earnings function had the following simplified general form (omitting subscripts i for notational simplicity)

$$\ln(W_m) = C_m + a_m S_m + b_m E_m + c_m \ln(H_m) + (X_m)m + e_m \quad (8)$$
$$\ln(W_f) = C_f + a_f S_f + b_f E_f + c_f \ln(H_m) + (X_f)f + e_f \quad (9)$$

where W stands for weekly earnings, C is the constant term, S refers to education measured in years of schooling, E is potential experience also in years (age minus years of schooling minus 6), H is weekly hours worked and X is a vector representing whatever other variables might have been included in the earnings functions of individual country studies. Lower case letters attached to these variables stand for their respective coefficients, subscripts m and f refer to men and women, and e is an error term assumed to have the usual properties. This specification is applicable when the dependent variable is specified as weekly earnings and below we concentrate on the results from earnings functions specified in this way. For brevity, we report results for coefficients derived from the sample of women workers only, that is, uncorrected for selectivity for four reasons. First, the difference between corrected and uncorrected coefficients was not that great. Second, uncorrected results are more comparable across countries than corrected results because the variables used in the participation functions (in order to estimate the selectivity correction variable) varied between countries. Third, women workers are the appropriate reference group for explaining the observed (actual) gap in wages (rather than the gap in wage offers). Fourth, the coefficient on the selectivity correction variable (lambda) was found to be statistically insignificant in half of the countries studied. A final remark to be noted is that our regional averages were calculated from percentages while there are effects from other variables which are not taken explicitly into account (the variables denoted by X in equations 8 and 9). As a result, their sums do not match exactly the observed pay gap.

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[41]This was derived by taking the difference between the uncorrected estimates for the part of the pay gap attributed to rewards (97 percent) and corresponding part suggested by the corrected coefficients (about 80 percent). Given that the male pay advantage is about 30 percent, this implies that (0.17x.0.30=) 5.1 percentage points would be eliminated from the actual wage gap, if working women were representative of all women in the economy.

Table 6 shows which part of the pay gap can be attributed to differences in endowments and which to difference in rewards with respect to each of the main variables indicated in the earnings functions (equations 8 and 9). In terms of endowments, women appear to be disadvantaged with respect to hours and also experience (though men have longer experience because of fewer years of schooling). These two variables taken together explain just over half of the pay gap (16.5 log-percentage points). However, differences in schooling favour women. In fact, schooling has a stronger effect than the effect of either hours or experience. As a result, the part of the pay gap that can be attributed to difference in endowments is reduced to only 22 percent.

Table 6
Contribution (in log-percentage points) of Selected Variables to the Male Pay Advantage in the Region

Variable	Due to differences in endowments	Due to differences in rewards	Total explained by the variable
Hours	6.6	-32.1	-25.5
Education	-11.1	-12.3	-23.4
Experience	9.9	10.2	20.1
Total excl. constant term	5.4	-34.2	-28.8
Constant term		52.2	52.2
Total incl. constant term	5.4	18.0	23.4
	(22%)	(78%)	(100%)

Source: Appendix Tables.

In terms of rewards, women seem to benefit significantly from education and hours (though the latter may be taken as an unfavorable result because women work fewer hours than men).[42] These two factors would have more than doubled the pay gap had it not been for the mitigating effect of the difference in the coefficients on experience. However, the contribution of experience is not that important and, as argued below, it may be a biased result against

[42]This is an appropriate point to raise a specific methodological issue in the present decomposition analysis. Can the greater female coefficients on hours be interpreted as discrimination against men? In fact, this is what a "mechanical" interpretation of the Oaxaca decomposition would suggest. However, we do not think this interpretation is correct. Another way of interpreting the female advantage in the rewards of weekly hours is the following: women are penalized in the labor market because working fewer hours than men reduces their pay proportionately relative to those men who work fewer hours. In this respect, what the present decomposition assigns as a female advantage in terms of rewards is in effect a disadvantage because the endowments in hours are systematically lower for women than men.

women as potential experience is used rather than actual experience. In any case, the net effect of these three variables still suggests a reversal of the pay gap (pay advantage for women). When the constant term is taken into consideration, the effect from the difference in rewards is inflated in the opposite direction to the point that rewards account for 78 percent of the male pay advantage.

These results may be subject to two different interpretations. First, ignoring the effect of differences between the constants terms, one can argue that in many Latin American countries only a small fraction (if any) of the gross pay differential can be attributed to an inferior wage structure (differences in rewards) of women relative to men.[43] This remark should, however, be qualified because formal sector employees may be heavily represented in our samples -- and the role of public sector pay may be particularly distortionary. The over-representation of public sector employees in our data bases and the high wages paid to women workers in the government sector make us skeptical about the "no-or-little discrimination" results suggested by the present decomposition analysis. In addition, as argued below, it might be true that the constant term cannot be considered separately from the other "rewards" in the decomposition analysis but there is no practical objection that its place is among the "rewards" part of the gender wage gap.

The second interpretation stems from the last observation, that is, that the part of the wage gap attributed to the difference in the constant terms falls well within the potential discrimination aspect of the results. The constant term represents the "reward to the sex of the worker" when all other characteristics are equal to zero. In other words, the constant term can be interpreted as the earnings of an uneducated worker who is just about to enter the labor market. However, we are not prepared to accept that the difference in constant terms represents actual discrimination because information is lacking: the value of constant term is affected by factors pertaining to both labor demand and labor supply.[44] With respect to labor demand, one can mention differences in productivity between the sexes or imperfect information, while on the labor supply side there may be differences in tastes between women and men. This is a pessimistic conclusion to the present analysis. The light that was shed into the economists' "black box" (differences in rewards or "upper bound of discrimination") revealed that there was another black box inside it: the constant term is another black box on its own.

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[43]This is not an uncommon finding in the literature on discrimination for developing countries. Knight and Sabot (1982) report that in Tanzania in 1971 only 5-17 percent of the gross pay differential between women and men can be attributed to different wage structures when evaluated at male means while it is negative (-3 to -45 percent) if evaluated at female means. Similar results are reported in many of the studies included in Birdsall and Sabot (forthcoming).

[44]The role of the constant term in measuring discrimination is questionable, if the constant term is taken to proxy the average effect on earnings of productivity characteristics omitted from the analysis. However, if the earnings functions are correctly specified, then the constant term should be included in the decomposition formula.

A more optimistic interpretation may, however, be relevant to our findings. The constant terms can be seen as a pure premium that is independent of a worker's other wage-determining characteristics. Hence, if women are undervalued in the market when they have few characteristics (zero endowments) but recoup almost half of the lost ground because of the effects of schooling, hours of work and, possibly, experience, then one may have a policy prescription to the problem of growth and the feminization of poverty: if a woman's education increases and her labor force attachment and experience also increase, her pay will increase proportionately more than a man's pay in similar initial conditions. In fact, we believe that this is the way the present findings should be interpreted.

7. Summary of Findings and Policy Options

Female participation has increased significantly in Latin America since the 1950s. The increase was due to the higher participation rates of prime-age women in the recent period. Younger and older women experienced a decline in their participation rates. These movements are comparable to those observed in advanced countries sometime in the past and are also in accordance with conventional explanations based on income/substitution effects during economic development and growth. However, in some countries these changes occurred against the background of a prolonged and deep recession. One explanation may, therefore, be that women benefitted disproportionately to men from the expansion of the public sector. As a result, women as a group have improved their status in the labor market. However, if the public sector explanation is relevant, then the efficiency and distributional effects from the increase in female participation in the region may not have been beneficial -- from an economist's point of view -- for two reasons. First, in general terms the public sector pursues a variety of objectives (political, national, social) and in a way that is not necessarily guided by economic ("price") considerations. Of course, a country's prosperity does not depend only on economic efficiency but, in the absence of detailed information about country objectives other than economic ones, this is a reservation that need be mentioned. Second, given that workers (and, especially, female workers) in the public sector are more likely to be those with more education, the distributional effects of the higher participation of women may also be suspect: urban "middle-class and upper-class" women are more likely to end up consuming most of the public subsidy to education while female absolute and relative-to-male pay is higher in the public sector than in the private sector. This issue requires more statistics than those we detailed had at our disposal.

Our suspicion about the link between publicly (no-fee) provided education and eventual employment in the public sector does not, however, mitigate the validity of the systematic relationship that we were able to identify between, on the one hand, education and, on the other hand, women's employment and pay. The participation functions show that, after controlling for other factors, the probability of participation is greater the higher a woman's educational qualification is. Similarly, women's earnings increase as formally acquired education increases. Although the issue of occupational choice has not been explicitly addressed in our study, the effect of education upon a woman's propensity to work and her level of pay is sufficiently clearcut to guide public policy -- provided that one avoids the (suspected) distortions mentioned

in the previous paragraph with respect to employment and pay practices in the public sector. In particular, creating opportunities for female education and employment when such opportunities are absent due to some sort of market failure (of which discrimination is just one reason) will enhance efficiency and alleviate poverty.[45] When women stay longer in the education system their natural (maximum) fertility rate is reduced.[46] In addition, women are exposed to influences which typically alter their preferences away from the traditional large-family norms toward fewer children.[47] Apart from an effect via lower fertility, education increases women's propensity to work because the opportunity cost of staying at home (foregone income) also increases. [48] Women's greater attachment to the labor market can subsequently increase their actual labor market experience, augment family income (in a conventional family context) and reduce the incidence of poverty among prospective female-headed households.[49] The increase in female human capital also assures a more effective use of half of the country's potential work force and induces men to work in a more competitive environment. Finally education enhances family production broadly defined.[50]

Female earnings also increase with schooling and, in many cases, faster than male earnings: on average an additional year of schooling increases female earnings by 13.1 percent in our sample compared to an increase of 11.3 for men (Appendix Table A3, columns 4 and 5). Thus, the distributional effects of more/better female education are warranted and desirable from a social cost-benefit point of view; the same marginal investment (one additional year of education) yields higher returns for women than men. Is a policy of expanding female education desirable given that the average length of schooling among female workers is already higher than that of men (Appendix Table A3, columns 1 and 2)? The answer is affirmative because what is relevant is not the educational composition of the female labor force but that of the female population as a whole. The case even of the most economically advanced countries in our sample is telling indeed. In Venezuela, working women have, on average, 7.9 years of schooling while non-working women have only 5.5 years of schooling -- far behind the average

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[45]Blau, Behrman and Wolfe (1988); Psacharopoulos and Tzannatos (1989).

[46]It has been shown that there is a strong negative effect between female education and family size through a price substitution effect as well as birth control knowledge and contraceptive efficiency (Heer and Turner, 1965; Westoff, 1967; Harman, 1969; Da Vanzo, 1971; De Tray, 1972, 1973; Cochrane, 1979; Kelly et. al., 1980; Da Silva, 1982; Mueller, 1984).

[47]Easterlin (1969); Tzannatos and Symons (1989).

[48]Khandker (1987, 1988); Psacharopoulos and Tzannatos (1990).

[49]Schultz (1969b).

[50]Children's well-being and educational attainment has been found to be highly correlated to mother's education. Educated women are in a better position to prepare meals in a more hygienic way and can look after ill members of the household better (Chiswick, 1974; Leibowitz, 1974; Haveman and Wolfe, 1984; Michael, 1984).

attainment of men (7.0 years). In Argentina, working women have 9.4 years of schooling compared to 8.8 years for men and only 7.8 years for non-working women. The disparity between female and male length of schooling is even greater in the less advanced countries of the region and between urban and rural areas.[51]

Providing more education to women appears to be a promising direction social policy can move in. In terms of simple arithmetic, average female education will increase more, and in a more cost-effective way, if many illiterate women attend primary school than if a few secondary school graduates attend a 4-year university course. In this respect, the high rates of return to female university education when education entered the earnings functions as a spline variable rather than in a continuous variable representing years of schooling, need be qualified accordingly.[52] First, the most qualified workers, especially females, find employment in the public sector, and our estimates may simply reflect this. Second, and more importantly, the earnings functions that are estimated in the conventional econometric form are based on the explicit assumption that the only cost of education is foregone earnings during the period of studies, which amounts to saying that education is a free good in terms of other costs. This is clearly unrealistic and the difference between the returns to primary and university education is not necessarily so great as to justify the public provision of more tertiary education at the expense of lower levels of education.[53] Third, and finally, the pro-rich distributional effects of the emphasis on tertiary education, rather than basic education, in developing countries have been widely documented.[54]

With respect to other determinants of female participation, the econometric results showed that family characteristics are important determinants for a woman to participate or not to participate in the labor force. Single women are more likely to participate than married women. Among the married, those with many and young children are less likely to participate than those with fewer or older children. Though some of these "characteristics" are endogenous (for example, women decide about whether to work and whether to have a family and children), policies which affect family size can be beneficial. One such measure is improving women's understanding, especially in rural or relatively poor areas, of how to avoid unwanted pregnancies

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[51]See individual country studies in Psacharopoulos and Tzannatos (1991).

[52]This finding is quite common in developing countries (Haque, 1984; Khan and Irfan, 1985).

[53]For estimates of the cost-efficiency of investment on different levels and types of education see Adelman (1975); Colclough (1982); Mingat and Tan (1988); Psacharopoulos (1977, 1985); Lockheed (1988).

[54]The unintentional distributional effects of public expenditure on education have been shown by among others Ribich (1968); Selowsky (1979); Stromquist (1986); Tzannatos (1991).

and have access to contraceptives.[55]

An additional increase in women's work effort can come through the encouragement of women's re-entry into the labor market after an interruption in employment. This can be achieved by the provision of effective and cost-efficient pre-school and child-care facilities. Recall that the typical pattern is for women in the region to withdraw from the labor market upon child-bearing with little tendency to re-enter the labor market at a later stage in their lives. The usual approach has been for governments either to provide such child-care facilities free/ heavily subsidized or not to provide them at all. Where free child-care facilities are offered, these have been largely urban-based with a relatively limited number of places. As a consequence, the most needy groups have seldom been the beneficiaries of the subsidies. Offering pre-school care with selective cost recovery measures along social cost-benefit lines would enable more women to enter employment and, subsequently, to improve their income potential. It would also assist children from disadvantaged background by exposing them to organized pre-school education and by improving their socialization.[56] In addition, daycare can provide a medium through which children can be reached with targeted immunization, nutrition and other programs.

The family structure observed in industrialized countries is not that typical in the Latin American region. Internal and overseas migration ("women as urban domestic servants and men as industrial workers abroad") is quite significant while in some areas, especially in the Caribbean, visiting partnerships are a common form of arrangement.[57] Given the longer life expectancy of women and the fact that in most marriages women are younger than their husbands, widowhood even during prime age is not uncommon.[58] In addition, societal norms may not encourage re-marriage.[59] These complex socio-demographic effects throw women into a vicious cycle of inability to work and poverty. In our samples female-headed households accounted for between 10-15 percent of all households in Argentina and Venezuela, and for as much as one-third in Jamaica (and around 50 percent in the Kingston area alone). Consequently, policies which directly (via the elimination of provisions in family law and taxation regulations which induce asymmetry in the treatment of women with respect to family/employment

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[55]Education increases the level of contraceptive efficiency and lowers the expenditure on contraceptives necessary to reduce the risk of pregnancy at a given level (Michael, 1973; Rosenweig and Wolpin, 1982).

[56]"New research indicates that our fears about average day-care programs are baseless: it shows that typical, not just ideal, daycare seems to have no ill effects..." (Nakamura, Nakamura and Cullen, 1979a, p. 135).

[57]It is commonly thought that the primary reason for the continuing increase in one-parent families is the growth in the number of divorced and separated mothers (Ermisch and Wright, 1990).

[58]Mohan (1986).

[59]Rosenhouse (1988).

decisions) or indirectly (via reducing the burden of child-care) improve women's employment opportunities during the critical period of family formation are bound to have beneficial distributional effects.[60] Whether such policies should be adopted does of course depend on costs. This is an area of research with potentially significant returns.

The final issue we tackled in this paper was that of the sex-wage gap. We found that differences in endowments explain little of the gross pay differential and rewards to female endowments are in most cases higher than the rewards to male endowments. With respect to education, women workers have typically more schooling than men and the economic returns to female schooling are in general greater than the returns to male schooling. One may note that there was no information in our data sets about the type of human capital held by women and men. The data on education (in effect, schooling) are reported simply in years (or highest grade completed) with no reference to the type of education which the individual has acquired. This lack of information necessitates the adoption of the uncomfortable assumption that there are no differences in the type of education acquired by women and men. However, we hasten to add that this may not be as a serious problem in Latin America as in the case of industrialized countries. The reason is that relatively few women in the region have attended school beyond the second education level. Many of women workers have not even completed lower secondary education and it is at the end of lower secondary education that studies become specialized. In fact, even as late as in 1980, about 11 percent of all females in the region aged 15 to 24 were illiterate, 17 percent in the 25-34 age group and as many as 26 percent in the 35-44 age group.[61] In conclusion, a relatively small number of observations in our samples is affected by the failure to standardize for the type of education women and men acquire. We believe, therefore, that our results might have not been significantly different, had we accounted for the difference in the type of education acquired by women and men.

Differences in endowments with respect to experience did not really exist in the data sets given the fact that we used potential, rather actual, experience. This statistical defect does not usually present problems in the case of men. Men are typically found in the labor force during most part of their lives. Hence, potential experience (that is, the difference between, on the one hand, age and, on the other hand, years of schooling and minimum school entry age) should be a fair approximation of men's actual experience. However, many women have interrupted work careers. Hence, potential experience usually overestimates the actual labor market experience of women. The implication of using inappropriately measured experience understates the significance of this variable for women's earning power and overstates the extent of

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[60]Economic theory predicts (e.g. Becker, Landes and Michael, 1977; Becker, 1981), and empirical evidence suggests (Goode, 1956, 1962; Bishop, 1980; Kiernan, 1986; Peters, 1986), an inverse relationship between income/class position and marital instability.

[61]UNESCO, 1990.

discrimination. There is no way out of this difficulty until more detailed data become available.[62] In the meantime, it can be noted that studies that had access to more complete data sets than we did have shown that a substantial part of the pay gap between women and men remains unexplained, even if data on actual experience for women are used.[63] This conclusion still holds when "imputed" (that is, estimated from family characteristics) experience is used in an attempt to decrease the bias arising from the use of potential experience in the case of women.[64]

One can add that, as in the case of failing to control for different types of education held by women and men, the use of potential experience in earnings functions applied to Latin America countries may not be as damaging as in the case of industrialized countries. The reason is because the average age of women workers in our samples was typically about 35 years and as low as 31-32 years in Bolivia, Mexico and Peru. Thus the average age of women in the region is lower than that in industrialized countries and the measurement error between actual and potential experience should be correspondingly lower. In addition, the typical female age-participation profile in the region suggests that women do not usually re-enter the labor market after an interruption in employment. As a result, it is possible that many of the working women in our samples may have been continuously in the labor market since they first started work. This presumption may be valid for another reason. Self-employment and family work are more prevalent in developing countries than in industrialized ones. These two types of work are more compatible with work at home than dependent employment and do not necessitate an interruption of employment when family formation starts. Therefore, a higher percentage of women in the region may have had continuous work experience since they started working compared with women in industrialized countries. Finally, one can add that it is possible that even many women who work in the formal sector may have had continuous work history as women are heavily employed in the public sector. These women have access to institutionalized maternity provisions which safeguard their return to work, if they wished to do so. Hence, it

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[62]Of course, to the extent that women's labor force participation decisions are affected by discrimination in the first instance, then even the use of actual experience in the earnings functions will produce biased results.

[63]Wright and Ermisch (1991) report that in the case of Britain, the use of actual experience reduces the unexplained part of the pay difference between women and men by one-third compared to the results derived from potential experience. The reduction in the part of the sex wage gap attributed to discrimination is practically the same when uncorrected and selectivity corrected earnings functions are used.

[64]Miller (1987); Wright and Ermisch (1991). In fact, the latter study attributes the "success of imputed experience" to the strong predictive power of childbearing patterns for women's actual work experience (ibid. p. 519). In the same tune, an earlier study concluded that the use of actual experience versus potential experience increases the percentage of the sex pay gap attributed to differences in endowments by only 5 to 10 percentage points (Zabalza and Arrufat, 1985) still leaving a substantial part (up to two-thirds) of the pay gap open to a number of alternative interpretations (Zabalza and Tzannatos, 1985, Chapter 1).

may be more likely than not that most of the women who were observed as working in our samples had worked continuously since they first entered the labor market and the bias arising from the inclusion of potential experience in the earnings functions may not be significant in the Latin America region.

8. Concluding Remarks

This paper examined the change in female participation over time, the determinants of women's decision to participate in the labor market in the late 1980s, and the factors explaining the sex-wage gap in 15 Latin American and Caribbean countries. The results were illuminating in certain respects but, equally, three issues remained unresolved. First, the fact that female participation rose during periods of recession is puzzling: this is not what we expected from our knowledge of the experience of industrialized countries. The relatively low gender differential in pay (compared with industrialized countries) is also difficult to explain: wage differentials in advanced countries were reduced only recently and in most cases only after legislation was enacted. Finally, women appear to be rewarded more than men with respect to the characteristics they hold: does this suggest that men are discriminated against? In our opinion, the only common explanation for these three findings is the dominance of a possibly distortionary public sector. At present this is a mere assertion that requires further research.

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Appendix Table A-1
Percentage of Male Pay Advantage Attributed to Differences in Endowments and Rewards

Country	Year	Male pay advantage[2]	Selectivity Uncorrected				Selectivity Corrected[1]			
			Evaluated at Female means		Evaluated at Male means		Evaluated at Female means		Evaluated at Male means	
			END	REW	END	REW	END	REW	END	REW
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Argentina	1985	43.2	22.0	78.0	32.0	68.0	54.0	46.0	87.0	13.
Bolivia	1989	47.3	14.9	85.1	24.1	75.9	14.9	85.1	24.1	75.
Brazil[3]	1989	35.7	n.a	n.a.	n.a.	n.a.	19.0	81.0	11.0	89.
Chile	1987	33.8	n.a	n.a.	n.a.	n.a.	-14.9	114.9	-13.7	113.
Colombia	1988	16.7	12.3	87.7	22.1	77.9	8.0	92.0	14.8	85.
Costa Rica	1989	21.3	-3.6	03.6	-3.2	103.9	5.5	94.5	6.7	93.
Ecuador	1987	41.6	26.4	73.6	33.2	66.8	37.8	62.2	57.2	42.
Guatemala	1989	26.4	-1.8	101.8	0.4	99.6	n.a.	n.a.	65.4	34.
Honduras	1989	21.1	-69.2	169.2	-81.9	181.9	-50.6	150.6	-46.5	146.
Jamaica	1989	55.1	n.a.	n.a.	n.a.	n.a.	-13.7	113.7	-19.1	119.
Mexico	1984	15.7	n.a.	n.a.	n.a.	n.a.	28.1	71.9	20.0	80.
Panama	1989	22.1	-22.9	122.9	-40.6	140.6	58.1	41.9	11.2	88.
Peru	1990	17.7	19.5	80.5	15.1	84.9	19.5	80.5	15.1	84.
Uruguay	1989	29.5	24.0	76.0	26.0	74.0	23.0	77.0	23.0	77.
Venezuela	1989	25.5	14.0	86.0	5.0	95.0	14.0	86.0	5.0	95.
Average[4]		30.2	3.2	96.8	2.9	97.1	20.4	79.6	17.4	82.

Notes: 1) Selectivity correction statistically insignificant in Argentina, Bolivia, Costa Rica, Peru and Venezuela.
2) Measured in log-percentage points. It refers to hourly pay in Brazil, Ecuador and Peru and weekly/monthly pay in other countries.
3) The figures for Brazil refer to married women working as employees.
4) Unweighted average.

Appendix Table A-2a
Average Hours per Week and Coefficients on Log (hours) by Sex

Country	Year	Average hours per week		Male advantage in hours (percent)	Coefficient on Log (hours)		Male advantage in coefficients (percent)
		M	F	(1)/(2)	M	F	(4)/(5)
		(1)	(2)	(3)	(4)	(5)	(6)
Argentina	1985	46.31	37.48	23.6	0.391	0.659	-40.7
Bolivia	1989	51.30	44.12	16.3	0.354	0.424	-16.5
Colombia	1988	49.90	46.10	8.2	0.426	0.458	-7.0
Costa Rica	1989	47.64	40.53	17.5	0.626	0.718	-12.8
Guatemala	1989	48.12	42.27	13.8	0.344	0.475	-27.6
Honduras	1989	45.73	43.75	4.5	0.301	0.438	-31.3
Panama	1989	42.76	40.14	6.5	0.660	0.600	10.0
Uruguay	1989	48.44	37.31	29.8	0.587	0.685	-14.3
Venezuela	1989	43.71	38.48	13.6	0.541	0.554	-2.3
Average		47.10	41.13	14.9	0.470	0.557	-15.8

Appendix Table A-2b
Contribution of Differences in Hours to the Male Pay Advantage

Country	Year	Evaluated at: Female means — Effect due to differences in		Evaluated at: Male means — Effect due to differences in		Total effect of hours upon the pay gap (7)+(8) or (9)+(10))	% of male pay advantage explained by differences in hours
		Endow.	Coeff	Endow.	Coeff		
		(7)	(8)	(9)	(10)	(11)	(12)
Argentina	1985	0.083	-0.971	0.139	-1.028	-0.888	-205.8
Bolivia	1989	0.053	-0.265	0.064	-0.276	-0.212	-44.8
Colombia	1988	0.034	-0.123	0.036	-0.125	-0.089	-53.2
Costa Rica	1989	0.101	-0.341	0.116	-0.355	-0.239	-112.2
Guatemala	1989	0.045	-0.490	0.062	-0.507	-0.446	-169.2
Honduras	1989	0.013	-0.518	0.019	-0.524	-0.504	-239.3
Panama	1989	0.042	0.222	0.038	0.225	0.263	119.3
Uruguay	1989	0.153	-0.355	0.179	-0.380	-0.201	-68.4
Venezuela	1989	0.069	-0.047	0.071	-0.049	0.021	8.4
Average		0.066	-0.321	0.080	-0.335	-0.255	-85.0
% of pay gap explained		23.4	-114.2	28.6	-119.4	-90.8	

Appendix Table A-3a
Average Years of Schooling and Estimated Coefficients on Schooling by Sex

Country	Year	Average years of schooling		Male advantage in schooling (percent)	Coefficient on schooling (x 100)		Male advantage in coefficients (percent)
		M	F	(1)/(2)	M	F	(4)/(5)
		(1)	(2)	(3)	(4)	(5)	(6)
Argentina	1985	8.80	9.41	-6.5	9.1	10.7	-15.0
Bolivia	1989	9.50	8.97	5.9	7.1	6.3	12.7
Brazil	1980	4.86	6.96	-30.2	14.7	15.6	-5.8
Colombia	1988	7.60	8.70	-12.6	12.0	11.2	7.1
Costa Rica	1989	6.66	8.47	-21.4	10.1	13.1	-22.9
Ecuador	1987	9.70	9.05	7.2	9.7	9.0	7.8
Guatemala	1989	3.90	4.72	-17.4	14.3	16.4	-12.8
Honduras	1989	4.89	6.29	-22.3	15.4	17.8	-13.5
Jamaica	1989	7.37	7.84	-6.0	12.3	21.5	-42.8
Mexico	1984	6.26	7.56	-17.2	13.2	14.7	-10.2
Panama	1989	9.21	10.45	-11.9	9.7	11.9	-18.5
Peru	1986	8.21	9.01	-8.9	11.5	12.4	-7.3
Uruguay	1989	8.34	9.06	-7.9	9.9	11.1	-10.8
Venezuela	1989	6.93	8.52	-18.7	9.1	11.1	-18.0
Average		7.30	8.22	-12.0	11.3	13.1	-10.7

Appendix Table A-3b
Contribution of Differences in Schooling to the Male Pay Advantage

Country	Year	Evaluated at Female means: Effect due to differences in		Evaluated at Male means: Effect due to differences in		Total effect of schooling (7)+(8) or (9)+(10)	% of male pay advantage explained by differences in schooling
		Endow.	Coeff	Endow.	Coeff.		
		(7)	(8)	(9)	(10)	(11)	(12)
Argentina	1985	-0.141	-0.065	-0.151	-0.056	-0.206	-47.7
Bolivia	1989	0.076	0.033	0.072	0.038	0.109	23.2
Brazil	1980	-0.044	-0.328	-0.063	-0.309	-0.371	-130.2
Colombia	1988	0.061	-0.123	0.070	-0.132	-0.062	-37.4
Costa Rica	1989	-0.200	-0.237	-0.254	-0.183	-0.437	-204.7
Ecuador	1987	0.068	0.058	0.063	0.063	0.126	30.4
Guatemala	1989	-0.080	-0.134	-0.099	-0.117	-0.216	-82.1
Honduras	1989	-0.117	-0.249	-0.151	-0.216	-0.367	-173.9
Jamaica	1989	-0.678	-0.101	-0.721	-0.058	-0.779	-141.5
Mexico	1984	-0.094	-0.191	-0.113	-0.172	-0.285	-181.5
Panama	1989	-0.203	-0.148	-0.230	-0.120	-0.350	-158.6
Peru	1986	-0.074	-0.099	-0.081	-0.092	-0.173	-95.2
Uruguay	1989	-0.100	-0.080	-0.109	-0.071	-0.180	-61.1
Venezuela	1989	-0.139	-0.176	-0.170	-0.145	-0.315	-123.7
Average		-0.111	-0.123	-0.129	-0.105	-0.234	-92.3
% of pay gap explained		-40.4	-44.7	-47.0	-38.1	-85.1	

Appendix Table A-4a
Average Years of Potential Experience and Coefficients on Potential Experience by Sex

Country	Year	Average years of potential experience		Male advantage in (percent)	Coefficient on experience (x 100)		Male advantage in (percent
		M	F	(1)/(2)	M	F	(4)/(5)
		(1)	(2)	(3)	(4)	(5)	(6)
Argentina	1985	24.19	21.30	13.6	4.9	3.8	28.
Bolivia	1989	18.44	20.49	-10.0	5.0	2.8	78.
Brazil	1980	26.31	21.01	25.2	4.2	3.9	7.
Colombia	1979	7.04	5.56	26.7	2.5	2.2	13.
Costa Rica	1989	22.45	19.10	17.5	3.5	3.1	12.
Ecuador	1987	23.60	22.80	3.5	3.1	1.4	121.
Guatemala	1989	24.90	22.16	12.4	4.5	4.1	9.
Honduras	1989	23.81	21.33	11.6	5.2	5.0	4.
Jamaica	1989	21.35	22.64	-5.7	7.7	8.2	-6.
Mexico	1984	20.76	16.91	22.8	8.6	6.6	30.
Panama	1989	20.36	18.36	10.9	7.9	10.3	-23.
Peru	1986	19.22	15.86	21.2	5.5	7.6	-27.
Uruguay	1989	24.47	22.48	8.9	5.8	4.2	38.
Venezuela	1989	23.05	19.55	17.9	3.5	2.8	25.
Average		21.4	19.3	12.6	5.1	4.7	22.

Appendix Table A-4b
Contribution of Differences in Potential Experience to the Male Pay Advantage

Country	Year	Evaluated at Female means: Effect due to differences in		Evaluated at Male means: Effect due to differences in		Total effect of experience (7)+(8) or (9)+(10)	% of male pay advantag explaine by differen in exper en
		Endow.	Coeff	Endow.	Coeff.		
		(7)	(8)	(9)	(10)	(11)	(12)
Argentina	1985	0.266	0.110	0.234	0.142	0.376	87.1
Bolivia	1989	0.406	-0.057	0.451	-0.103	0.348	73.7
Brazil	1980	0.079	0.207	0.063	0.223	0.286	100.2
Colombia	1979	0.021	0.033	0.017	0.037	0.054	19.0
Costa Rica	1989	0.090	0.104	0.076	0.117	0.194	90.7
Ecuador	1987	0.401	0.011	0.388	0.025	0.412	99.2
Guatemala	1989	0.100	0.112	0.089	0.123	0.212	80.4
Honduras	1989	0.048	0.124	0.043	0.129	0.172	81.4
Jamaica	1989	-0.107	-0.106	-0.113	-0.099	-0.213	-38.6
Mexico	1984	0.415	0.254	0.338	0.331	0.669	426.3
Panama	1989	-0.489	0.206	-0.441	0.158	-0.283	-128.0
Peru	1986	-0.404	0.255	-0.333	0.185	-0.148	-81.4
Uruguay	1989	0.392	0.084	0.360	0.115	0.475	161.3
Venezuela	1989	0.161	0.098	0.137	0.123	0.259	101.8
Average		0.099	0.102	0.093	0.108	0.201	76.6
% of pay gap explained		32.6	33.9	30.9	35.5	66.4	

Appendix Table A-5
Contribution of differences in the constant terms to the male pay advantage

Country	Year	Male pay advantage	Constant term		Difference in constant terms (2)-(3)	% of male pay advantage explained (4)/(1)
			Male	Female		
		(1)	(2)	(3)	(4)	(5)
Argentina	1985	0.43	8.34	7.07	1.27	294.1
Bolivia	1989	0.47	1.58	1.35	0.23	48.7
Brazil	1980	0.29	2.40	1.75	0.65	227.9
Colombia	1988	0.17	5.66	5.66	0.00	0.0
Costa Rica	1989	0.21	4.53	3.69	0.84	393.6
Ecuador	1987	0.42	3.58	3.48	0.10	24.0
Guatemala	1989	0.26	2.01	0.97	1.04	394.7
Honduras	1989	0.21	1.25	0.33	0.92	436.5
Jamaica	1989	0.55	1.61	-0.44	2.05	372.3
Mexico	1984	0.16	6.66	6.58	0.08	51.0
Panama	1989	0.22	0.72	0.48	0.24	108.7
Peru	1990	0.18	2.10	1.78	0.32	180.5
Uruguay	1989	0.29	1.11	0.42	0.69	234.3
Venezuela	1989	0.25	3.92	3.52	0.40	157.1
Average		0.30	3.52	2.62	0.63	208.8

Appendix Table A-6
The value and significance of the Lambda sample selection variable in the earnings functions

Country	Year	Coefficient	Value t
Argentina	1985	-0.08	1.7
Bolivia	1989	0.07	1.2
Brazil	1980	-0.30	6.5
Chile	1987	-0.82	9.9
Colombia	1979	-0.09	1.3
Costa Rica	1989	-0.05	1.1
Ecuador	1987	0.03	0.5
Guatemala	1989	-0.29	7.5
Honduras	1989	-0.59	11.3
Jamaica	1989	-0.39	4.3
Mexico	1984	-1.45	6.7
Panama	1989	-0.39	12.3
Peru	1990	-0.05	1.0
Uruguay	1989	0.06	2.0
Venezuela	1989	-0.14	1.6

Notes: See notes to Appendix Table A1.

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